

†9. PLEGADIS GUARAUNA (Arg. Orn. ii. p. 109).

This Ibis breeds here in immense colonies during November in our rush-covered lagunas. Here must have been thousands of nests, which were constructed of dry weeds, raised above the water some eighteen inches. They are well-made structures and are close to each other, as in a gully, each nest containing three eggs of an uniform intense blue.

† 10. DAFILA BAHAMENSIS (Arg. Orn. ii. p. 135).

Of this Duck I have found nests under tall grass similar to those of *D. spinicauda*; but the eggs differ in being more glossy and slightly smaller.

11. COLUMBA PICAZURO (Arg. Orn. ii. p. 139).

♂. No. 201. Very common throughout the winter, as is also *C. maculosa*.

XXXI.—Notes on the Nidification of some Indian Birds not mentioned in Hume's 'Nests and Eggs.'—Part III. By E. C. STUART BAKER, F.Z.S.

[Continued from 'The Ibis,' 1895, p. 236.]

34. DICRURUS ANNECTENS. (*Oates, Fauna of British India, Birds, i. p. 312.*)

All the nests of the Dicruridæ appear to be very much like one another, and the nest of this, the Crow-billed Drongo, is not, to any appreciable extent, different from those of *D. ater* and its allies; but, taking a large series of nests into consideration, that of *D. annectens* will be found to be somewhat smaller and neater than that of any of its nearest relations, and at the same time it is even more fragile. The structures are of the usual cup-shape, measuring somewhat under $3\frac{1}{2}$ " in external diameter by about an inch in depth, and the external measurements vary considerably, according to the site and position of the nest, being sometimes as much as 5" across, at others barely 4". Fine pliant twigs, coarse grasses, and similar articles form the staple part of the materials used, these being very thoroughly intertwined and much bound

together with cobwebs, while the outside is very completely covered with scraps of bark, lichen, and moss, the edges of the nest being neatly rounded and finished off with these, and the outside, very often even of the bottom, being completely covered with the same. There is no real lining.

The eggs are undistinguishable from those of other birds of the genus, but typically they are rather warm, richly-coloured eggs. I have no eggs with a white, or even with a *very* pale pink ground. The majority are a rather deep pink—almost approximating the tint of the eggs of *Bhringa remifer*—blotched somewhat sparingly with rather light reddish brown, and again, with others, subordinate to these first, of pale lavender.

Twenty-five eggs average $0''\cdot94 \times 0''\cdot74$, and they vary between $0''\cdot88$ and $1''\cdot02$ in length and between $0''\cdot7$ and $0''\cdot81$ in breadth.

I found this bird breeding at a place called Guilang, at altitudes between 3000 and 4000 feet, in the end of April and early May, 1891, but since have never met them again. In that year they were very numerous, and I sometimes took three and four nests in a day. The nests were generally taken from thin forest or the outskirts of the more heavy. The site selected was usually from 10 to 20 feet from the ground in small horizontal branches of young trees.

Three seems to be the normal number of eggs laid, though I have found two hard-set, and have once taken four from a nest.

35. DICRURUS CINERACEUS. (*Oates*, op. cit. i. p. 318.)

The nest is not to be distinguished by its general appearance from those of *D. ater* and other Drogos, but, taking into consideration the whole of the very large number which I have seen, I should say that they are not quite so tidy as are most nests of this genus, the inner part—it can hardly be termed lining—often projecting over and beyond the lichen and cobwebs. Nine nests out of ten are made of exactly the same materials and of the same shape, viz. flat-bottomed, shallow cups, averaging some $4\frac{1}{2}''$ in external

diameter by something under 2" in depth. The inner cup may measure about 3" by 1".2 or less.

The materials consist of fine but strong grass-stems internally, these being wound round and round, but not much interlaced or twisted into the outer part, which is made of stems of herbaceous plants, tough but slender twigs, and coarse grasses, the whole liberally besprinkled with cobwebs, spiders'-nests, and lichen, the last usually greatly preponderating over all the rest.

The nest is generally, but not always, placed at a considerable height from the ground, and the site selected by the birds is a fork, either upright or horizontal, perhaps most often the latter, towards the summit or outermost branches of the tree. It seems always to be very strongly attached to the supporting twigs, these often being entirely covered with the materials of which it is made, or, at other times, very firmly wound round and about with the tenacious yellow cobwebs of a large black-and-yellow spider, which is unpleasantly common in all the south-eastern hills below the Himalayas.

Typically the eggs of the Eastern Grey Drongo are of a deep, warm cream-colour, with rather numerous blotches of red and reddish brown, with others underlying them of pale neutral tint or lavender-grey. This type may be matched with a few clutches of eggs either of *D. ater* or *D. longicaudatus*, but they are much more warmly tinted than the average eggs of either of these birds.

The next most common form of egg has the ground white or very nearly so, and the markings, which are smaller and more sharply defined than in the last-described sort, are of a deep purple-brown, with others of the same colour, but much paler, looking as if they had been nearly washed out. In the majority of eggs of this latter type the markings will be found to be most numerous in a broad irregular ring at the larger end and rather scarce elsewhere; in other eggs they are scattered about the whole surface, though generally less plentifully at the small end than at the large. I have seen no pure white eggs of this species.

The texture of the shell is that of the normal Drongo's egg. The shape is broad oviform typically, but all shapes occur, from the broad pegtop, which is very rare, to the more common long, narrow oval. One hundred eggs average $0''\cdot90 \times 0''\cdot73$, and they vary from $0''\cdot80$ to $1''\cdot02$ in length and from $0''\cdot68$ to $0''\cdot77$ in breadth.

The full clutch of eggs seems to number either three or four, the former most frequently.

This Drongo, like most others, is a very early breeder, April being their favourite month, while a few lay in March, and not many after the middle of May. They breed in large numbers all over the North-Cachar hills, but I have not heard of their breeding in the plains, though I think it is probable that they do so.

36. *CERTHIA NEPALENSIS*. (*Oates*, op. cit. i. p. 330.)

I have seen but one nest of this bird, which was taken on the 16th May, 1890, from a large tree growing on a peak towards the east of the Cachar hills. The elevation was close on 6000 feet. The bark of this tree was in a very ragged state, large pieces projecting here and there all over its surface in a semi-detached manner. In one of the larger of these fragments of bark, which only adhered to the tree by its basal quarter, a pair of Tree-creepers had made their nest, a small, shapeless mass of moss and moss-roots, with snug little cup of some 2'' in diameter. It was placed at the very bottom of the hollow, and no other materials than moss and moss-roots had been used.

The eggs, of which there were three, are white, boldly, but not very thickly, spotted with light reddish, the spots being most numerous towards the larger end, at the *extremity* of which they form a fairly distinct ring. The texture is fine and close, but glossless, and the shell is strong in proportion to the size of the egg. They measure $0''\cdot59 \times 0''\cdot45$, $0''\cdot60 \times 0''\cdot47$, and $0''\cdot60 \times 0''\cdot46$.

37. *ELACHURA HAPLONOTA*.

The mode of nidification of this bird was recorded in 'The Ibis' (1892, p. 62), when I first described the bird itself.

38. PNOEPYGA PUSILLA. (*Oates, op. cit. i. p. 343.*)

This little Wren constructs two types of nests, very different from one another in character, so much so that one would almost imagine them to be built by birds of different species. Perhaps the most common position selected is one on the trunk of some tree which is covered with long pendent moss, and during April and May, 1895, I took several nests from such places, a description of any one of which would do almost equally well for all the rest.

Wandering along a road cut through heavy, evergreen forest, the trees on either side covered with most luxuriant growth of all kinds, I was attracted by the unusual heaviness and length of the brilliant green moss which covered the whole surface of the trunk of a large tree that grew beside and hung over the path. Going closer to examine it, I saw a small bird fly from out of the moss at about the level of my head, and, putting in my fingers whence it had flown, I discovered a nest and three eggs.

The first work of the bird seems to be to attach some of the loose, lower ends of the moss to small, rough projections in the bark of the tree, so as to form a rough loop beside it. It then works more and more moss into the loop—not tearing it from the tree, but using it as it grows—until it has a firm basis to work on. As soon as this is obtained it collects quantities of the fine black roots of the same kind of moss and works these in with the lining-material already used, so that finally it has a beautiful little pad securely fastened inside the living green moss on the tree. The depression in the pad for the eggs to lie in is rather shallow, about half an inch, while it may be about 2" across. Externally, of course, the size depends much on the luxuriance of the moss in which it is placed, but the comparatively solid base is generally somewhere between $2\frac{1}{2}$ and 3 inches in diameter, its depth seldom exceeding an inch, and often being considerably less. No artificial entrance is required, as the birds can easily slip in and out between the tree and the moss.

Most nests which I have found built thus, against the sides of trees, have not been very low down on them; most

of them are placed at a height of from 4 to 6 feet from the ground, while I have taken others at heights of from 10 to 12 feet from it, and one fully 20 feet from the ground.

The other type of nest is that which I found first, and the following description will show how different it is from that already described. It is not quite so commonly found as the last, and I should think that the first type of nest numbers about three in five of all those I have either found myself, been shown *in situ*, or had brought to me. The nest I am about to describe was found in the same evergreen forest as the other, but whereas that was taken high up on a lofty peak over 4300 feet high, this was found in a valley at the foot of the peak and fully 1000 feet lower.

In this valley, in a rank tangle of grass and bushes, lay the remains of a once mighty tree, its rapidly decaying trunk obliterated with dense masses of ferns, mosses, and orchids of all kinds, among them the most prominent being the sweet-scented *Celogyne ocellata* and *Dendrobium densiflorum*. Stepping on this trunk, and clutching for assistance as I climbed at the plants, I disturbed a pair of Brown Wrens, so at once slipped quietly down again and, leaning against a tree close by, waited until they should return. In a very few minutes back they both came, and after bustling about for a short time in a very consequential manner, disappeared into what looked like a ball of live moss tucked away among a mass of yellow-flowering orchid. On approaching nearer, however, I found that the seeming lump of moss was in reality a most beautiful little globular nest, made of the brightest and freshest moss and lined with the finest roots of the same. It was wedged in well under the orchid and rested on the remains of a small branch which still jutted out from the trunk. The leaves and flowers of the orchid hanging over the entrance concealed it from any but the most careful search, while the brilliantly green moss which the bird had selected was just like that growing in luxuriant clumps all around it. Altogether it was, both in itself and its surroundings, one of the most beautiful little bird-residences which I have ever seen. Horizontally it was

about 3" in diameter, and about an inch more in height; the cavity measured about 2" or rather less, and the entrance was about an inch wide.

There seem to be no intermediate forms between these two types of nest, all those I have taken or had brought to me being distinctly referable to one or the other. Of course all are not so beautifully situated as the last-described nest, but many run it very close.

I do not think this Wren takes much care to *hide* its nest, but the way in which it builds it, either among or of the living moss itself, or among some mass of orchids, ferns, and other parasitic plants, renders it pretty well a matter of indifference to the bird whether the tree is one in an exposed position or not, and therefore there is nothing strange in the bird choosing, as it so often does, some tree standing beside a road.

Four is the full complement of eggs laid, sometimes only three, and more than once I have seen two only showing signs of incubation. They are, of course, pure white, and are of fine, close texture, very smooth and soft, but without any gloss, except in very rare instances, when perfectly fresh eggs may exhibit it, but even then only in the very slightest degree. They are very fragile, more so than smaller eggs of allied genera. In shape they are normally rather broad ovals, very little compressed towards the smaller end, which is blunt. Sometimes rather pointed specimens may be met with, and, still less often, long narrow ones, but the abnormal forms most often to be seen are such as are broad ovals rather suddenly compressed towards the smaller end, which, however, remains blunt as usual. Forty eggs average $0''\cdot7 \times 0''\cdot55$; the largest I have is $0''\cdot78 \times 0''\cdot60$, and the smallest $0''\cdot68 \times 0''\cdot52$. These birds breed from early April until about the middle of June.

39. *CISTICOLA TYTLERI*. (*Oates*, op. cit. i. p. 343.)

The nest of this bird is one of the most flimsy and delicate of those I know, if not the most so, often looking as if it could not bear the weight of a clutch of eggs alone, far less

that of a healthy brood of four or five young ones, together with their mother. Generally it is in shape a small purse, about $3\frac{1}{2}$ inches in height by about an inch less across the widest part. The entrance, very irregular in shape, is always very large in proportion to the size of the nest and is very roughly finished off. In general shape the nest is very much like a large egg placed on its bigger end and with the smaller sliced off in a slanting direction. It is made almost entirely of the flowering ends of fine grasses, from which most of the down and all the seeds have been stripped, but in addition to these ends there are nearly always a few narrow strips of grass-blades used also, these last sometimes being torn from dead, dry grass, at other times being quite fresh and green, contrasting with the remainder of the material. The situation most often chosen is in a tall tuft of grass, to two or three of the stems of which it is attached, the blades also being sometimes bent down and partly incorporated with the sides.

Another form of nest is just like a watch-pocket built against a large leaf of some ground-plant. The materials used are the same as in the purse-shaped nest, and the leaf is not drawn together in any way, or, at all events, only very slightly so, merely forming the back-wall of the nest. The leaf is pierced here and there to admit of the cotton-down being passed through, so as the more securely to attach the nest to the leaf; but the punctures are very coarsely bored, and the attachments look as if most roughly and carelessly put together. A few cobwebs are used about the nest itself and a few on the obverse side of the punctures, where they are massed up into sticky little balls, which prevent the materials from slipping about.

The eggs are very lovely, and show more similarity to those of *Prinia inornata* and the nearest allies of that bird than to any others of the family Sylviidae, except, of course, *C. volitans*, the Golden-headed Fantail Warbler. In ground-colour they are a beautiful blue, pale but very bright in tint, and they are either irregularly marked with bold, well-defined blotches of rather light brown or reddish brown, or else

speckled and spotted with a very deep purplish black. If the former, the blotches are of often considerable size, sometimes as much as $0''\cdot15$ in their longest diameter, but if the latter they are *always* very small. The markings are seldom at all numerous in either type, and are sometimes confined almost entirely to the larger end, this being, perhaps, more often the case with the blotched than with the spotted eggs. The grain is exceedingly close, and the surface smooth and decidedly glossy, the shell being stout and strong for so tiny an egg. In shape they are broad regular ovals, very little compressed towards the smaller end, and in this, as well as in their coloration, they closely resemble the eggs of the Common Indian Wren-Warbler. Four is the number of eggs most often laid, but I have taken five from the same nest. Eighteen of my eggs average $0''\ 57 \times 0''\cdot46$, and they range between $0''\cdot55$ and $0''\cdot6$ in length and between $0''\cdot45$ and $0''\cdot48$ in breadth.

These birds are early breeders, April and May being the usual months, but, where met with, they are so common that their nests may be found any time between the end of March and end of July, the first nest I ever saw having been taken as late as the 4th of the last-mentioned month. They are very difficult nests to find, and they are built on hills covered with a perfect sea of long grass, and the birds, moreover, give little or no assistance in discovering them. Unless it is actually raining, I do not think that the parent birds sit on the eggs at all during the daytime. I spent several days in 1891 hunting for the nests of this little Warbler, and all those which I obtained on fine days were discovered more or less by accident, for the birds were never noticed on or near the nests unless there were young which required feeding. On one day, however, when there was a continuous cold drizzle, the only two nests I obtained were both discovered owing to the bird being observed as it crept away. They are very cute and do not fly away straight from the nest itself, but creep quietly out of it and sneak through the grass for a few yards before taking wing, and then, when once they do fly, go straight away instead of staying close by and

showing anxiety as to the fate of their eggs or offspring. Rarely a nest may be found by watching the cock bird as he soars round and round, constantly uttering his plaintive little *chee-e-ah*, then, after a short while, the note ceases and the bird drops headlong down to the grass, and those unlearned in his wiles would think he had settled where he fell; but not so, for if carefully watched he may be observed skimming through the tops of the grass, often for a distance of from 20 to 50 yards before alighting. If this place is carefully marked—not an easy thing to do where all the grass seems alike—the nest may be sometimes found, often even then not until after a prolonged search.

40. PHYLLOSCOPUS MANDELLII. (*Oates*, op. cit. i. p. 411.)

At the end of March, 1889, I had a nest and two eggs brought to me, the latter of which I then identified as *P. superciliosus*, but which were really *P. mandellii*. The nest was said to have been taken from a steep bank composed almost entirely of stones overgrown with moss, in between some of which it had been placed. Outwardly it was made of fresh green moss alone, but there was a little very fine grass used in the lining in addition to numerous hair-like roots, both of moss, maiden-hair fern, and similar plants. In shape it was a completely domed oval, and, judging by its appearance, it had been placed just at the entrance of some natural hollow, as the sides were neatly rounded off and had not been compressed or otherwise made so as to fit into the sides and back of a hole. Vertically it was about $6\frac{1}{2}$ inches, horizontally about an inch less. The entrance was close to the top and was a little over an inch in diameter.

There were three eggs brought with the nest, which were white, with somewhat numerous freckles and specks of rather bright reddish scattered all over the surface, in one egg only forming a distinct ring at the larger end. In shape they are true ovals. In texture the shell is close and fine, and in all three eggs there is a faint gloss perceptible. They measure $0''\cdot61 \times 0''\cdot43$, $0''\cdot6 \times 0''\cdot43$, and $0''\cdot6 \times 0''\cdot42$.

The nest was taken on the Hengmai Peak, some 5700 feet

altitude. I have not noticed the bird elsewhere during the breeding-season.

41. ACANTHOPNEUSTE VIRIDANA. (*Oates*, op. cit. i. p. 414.)

In July, 1891, I took a nest of the Greenish Willow-Warbler very near where that of the last-mentioned nest was found. I was crossing over the Hengmai Peak, and had very nearly reached the summit, when I seated myself on a pile of loose stems to rest for a little while. The road running over this mountain is very stony, and the tanks at the sides are little more than masses of stones of various sizes, with many hollows and crevices in between them. While I was seated I noticed a small bird fly out of one of these holes, and, on looking into it, I found a large globular nest, loosely made with moss and a few dead leaves, and lined with a mass of soft white goat's-hair. Seating myself again *behind* the heap of stones, I waited until one of the birds should return, and presently the male did so and was shot, after which I inspected the nest more closely. It was placed *well* inside the hollow, and was made, to a great extent, to fit into it, so that it was very massive and also irregular in shape. Roughly speaking, it was about 8 inches in height by about $5\frac{1}{2}$ in breadth. When pulled out it lost coherence, except about half an inch thick of the inner part, the mass here having been well matted together. No leaves had been used except for the outside.

There were three fresh eggs, very different in shape, texture, and appearance from any that I have seen of the genus *Phylloscopus*. They were pure white, with very fragile shells, the texture soft and porous, although with a fine grain, and there is not the slightest gloss. In shape they are decidedly broad ovals, measuring $0''\cdot58 \times 0''\cdot41$, $0''\cdot58 \times 0''\cdot41$, and $0''\cdot57 \times 0''\cdot42$.

This is rather a common little bird in the cold weather, but I have only seen it twice during the breeding-season—once as above described, and once in 1895, in early April, when I saw a pair on the Ninglo Peak. They were flying

about a ravine with stony sides, almost devoid of all vegetation, and I feel sure they had their nest somewhere near at hand, but they would not visit it whilst I was present, and a long search proved of no avail. The birds were very anxious so long as I stayed in the ravine, and often came within a very few feet of me; but, as they seemed equally alarmed wherever I went, their movements gave me no assistance.

42. CRYPTOLOPHA BURKII. (*Oates*, op. cit. i. p. 424.)

Of this bird also I have taken but one nest, which I found on the 28th of April at a place called Laisung, a hot, though rather high, valley with very dense vegetation. It was built against the moss-covered trunk of a large tree standing in evergreen-forest, at an altitude well under 3000 feet. The material used was entirely moss, and the nests differed in a good many respects from any I have seen of *C. xanthoschista*, which is the most common form in these hills during the breeding-season. In the first place, the latter bird always makes a distinct lining of some kind, generally of the softest of vegetable down, which nearly fills up the whole inside. In the nest of *C. burkii* there was, indeed, a kind of lining, but it was of moss only, but this so matted, beaten, and twisted together that it was the least soft and yielding part of the whole affair. It was also a far larger, as well as more solid, structure than any other nest I have seen of this genus. It measured no less than 8".4 high and 4".2 across the widest part, and this was solid moss, well put together, which was able to withstand a good deal of rough handling. The cavity was very small, and I do not know how the bird managed to sit in it. In diameter it was 1".8, and the depth just over 2".1. The female was caught on the nest by means of a fibre noose placed at the entrance.

There were four eggs in it, very hard-set, so that they were cleaned with a good deal of difficulty and are slightly broken. They are, of course, white, and the texture is very fine and smooth, showing a slight but decided gloss; considering how hard-set they were, the shells were very stout and compact.

They are stronger and more glossy than the eggs of any other bird of this genus, with the exception of *C. poliogenys*. They measure $0''\cdot68 \times 0''\cdot51$, $0''\cdot68 \times 0''\cdot5$, and $0''\cdot67 \times 0''\cdot49$.

This little Flycatcher Warbler is very common in the cold weather, and many must breed on the higher hills, but I have been very unsuccessful in getting their nests and eggs.

43. *LANIUS CRISTATUS*. (*Oates*, op. cit. i. p. 468.)

This is one of the commonest Shrikes in Cachar during the cold weather, more so than any other except *L. tephronotus*, and a certain number of birds stay every year and breed on the ranges to the east of the district, the eastern spurs of the Barail range, which are very lofty, appearing to be their favourite resorts. All the nests that I have seen of this bird have been much the same in construction as those of *L. nigriceps*, from which they could only be discriminated by their rather smaller size, and sometimes by their proportionately more shallow shapes. They are neat, compact, and very strongly put together cups, very nearly hemispherical in shape, the depth being a little in excess in proportion to the diameter. They are made entirely of grass, the inner portion being composed of strips of sun-grass blades as well as the finer stems, and the outer part entirely of grasses in flower, so used that the flowering ends are kept outside, giving the nest at a short distance much the appearance of a ball of vegetable down. The measurements of the exterior of the nest vary a good deal, according to the amount of material used; thus some are as much as 4 inches in diameter by about $2\frac{1}{2}$ deep, while others are little over 3 inches at their widest part. The egg-chamber may roughly be said to measure on an average some $2\frac{3}{4}$ inches by about 2 or less in depth.

As a rule, four eggs are laid, but sometimes five are to be found, and a nest was once brought to me containing six young birds. The eggs, are, I think, most like the eggs of *L. vittatus* among the other Laniidæ, but differ in being larger and, on the whole, more boldly marked. The

ground-colour is generally a pale, delicate, greenish white, sometimes tinged with grey, sometimes with yellow. The markings consist of small spots and freckles of light brown, underlying which are others of pale lavender-grey and reddish neutral tint. As a rule these secondary marks predominate and give the tone to the egg; both kinds are fairly numerous in a broad, ill-defined ring at the larger end, fewer inside the ring, and even more sparse elsewhere. Eggs with a pink greenish colour, reddish superior and lavender inferior markings, are decidedly rare, and, so far as I can remember, I have come across only two such clutches. Both these were unusually boldly marked. In shape and texture the eggs differ in no way from those of the other Shrikes. With the exception of the two pink clutches, I have seen no eggs which exhibited any gloss, and even in those it was very faint. My eggs average $0''\cdot85 \times 0''\cdot7$, but I have only measured 20. The greatest length and breadth among these was $0''\cdot89$ and $0''\cdot74$ respectively, and the least either way $0''\cdot8$ and $0''\cdot66$.

44. PERICROCOTUS SOLARIS. (*Oates*, op. cit. i. p. 485.)

The only nest I have seen of this Minivet was one taken in a small ravine running down from the Hungrum Peak. It was made of fine twigs and a few coarse grass-stems; scantily dotted outside with lichen, scraps of moss, and spiders' webs—the small, comparatively, amount of these adorning materials being the thing most noticeable about the nest. There was no lining of any kind. It measured externally $3'' \times 1''$, and internally $2''\cdot75 \times 0''\cdot5$.

It contained two young and an addled egg, the latter being the darkest Minivet's egg that I have ever seen. The egg is not unlike many House-Sparrows', longer in shape and with the markings decidedly longitudinal in character. These markings are brown and inky brown in colour, others, somewhat paler, underlying them, these last also being very large. The blotches and clouds coalesce at the larger end, and are numerous everywhere except at the extremity of the small end. There is none of the reddish or purplish tint so

often perceptible in the eggs of the *Pericrocoti*; the ground-colour is of the normal pale stone-colour, almost white. The egg measures $0''\cdot89 \times 0''\cdot50$, and will, undoubtedly, prove to be an abnormally large one.

45. *ORIOLOUS INDICUS*. (*Oates*, op. cit. i. p. 502.)

I have taken two nests of this Oriole, both of the ordinary cradle-shape and quite undistinguishable from those of *O. melanocephalus* and *O. kundoo*. Both were built in masses of creepers growing over oaks, which stood in thin forest composed of that species of tree, and both were at a very great height from the ground, and were only got at after much time and trouble had been spent over them.

The eggs, of which there were two in each nest, are of the usual Oriole type; three have a decidedly pink ground, perhaps rather darker than in most eggs of this genus, and are spotted in the ordinary way with rather dark reddish brown. The fourth egg differs only in being rather paler and being rather more sparingly, though boldly, blotched with a still darker brown. Two of the eggs measure $1''\cdot09 \times 0''\cdot76$ and $1''\cdot05 \times 0''\cdot79$. The other two eggs I presented to the Asiatic Museum, Calcutta, without measuring them before doing so, but they were, if I remember rightly, both larger and longer than those I retained for my own collection.

This species is not very rare here in December, January, and February, but, with the exceptions of the birds belonging to the two above-mentioned nests, I have never seen any during the other nine months of the year.

46. *ORIOLOUS TENUIROSTRIS*. (*Oates*, op. cit. i. p. 503.)

I have never seen a nest of the Burmese Black-naped Oriole, but I once had two eggs and portions of a skin of the parent bird brought to me by one of my collectors in Silchar. They are, for Oriole's eggs, unusually small, measuring only $1''\cdot01 \times 0''\cdot74$ and $0''\cdot98 \times 0''\cdot73$. The shape also is not common, being a broad blunt oval, slightly broader in one than the other. The ground-colour is a very faint, pinkish white, and they are boldly marked with rather light reddish-brown

blotches, which are confined principally to the larger end. The nest was not brought to me, but it was said to have been of the usual pendent cup-shape, and to have been taken from the outer branches of a small babool-tree, in which it was placed some 5 feet or so from the ground.

The bird is common during the cold weather in the plains, where *O. indicus* is extremely rare, and probably a good many remain there to breed. In the hills, however, it is hardly ever met with, and the few black-naped birds which do pass through are nearly all *O. indicus* and not *O. tenuirostris*.

47. *CYORNIS MAGNIROSTRIS*. (*Oates*, op. cit. ii. p. 26.)

The nidification of this bird very closely resembles that of *C. rubeculoides* and *C. tickelli*, differing only in a few minor respects, among which those most easily discerned are the following:—*C. magnirostris*, taking into consideration the average condition of all the nests which I have seen, makes a rather larger and also deeper nest than does either of the Flycatchers above-mentioned, and, again, it is less tidy; secondly, the Large-billed Flycatcher almost, if not quite, invariably places its nest actually on the ground, whereas the other two species build their nests, more often than not, in hollows in old stumps or in the tangles of creepers and plants which cover them.

C. magnirostris is not common in North Cachar, but in late April or early May a few nests may generally be found in the lofty valleys to the east of the district. Here the bird generally selects some dark ravine, where it makes its nest of moss and moss-roots, lining it with the same and placing it in some natural hollow among the stems which form the banks, or else it may build it in between the roots of a tree, or, more rarely still, at the foot of some shrub. In whatever place it may be built, it is nearly always well hidden, and it would not be an easy nest to find were it not for the male bird's habit of perching close to the nest and singing its cheerful little song with great persistence and energy. Once only have I taken the nest from a hollow in a tree, and this

one was found in a stump covered with a plant, which looked like a Virginia creeper, as well as with moss and lichen. This nest was not so bulky as most, measuring only about 5", and about 2".5 in depth. The average nest would measure about 6 inches in diameter outwardly, but, of course, exact measurements can seldom be taken, the nest more or less conforming in shape to the hollow in which it is placed, and, when such hollow is rather large, it is often a very massive, bulky structure. In such cases many leaves and other scraps of rubbish are used to fill in the sides in addition to the moss of which the true nest is made. The egg-cavity is generally considerably over 2" across the top, and the depth is often as much, seldom under 1½ inch.

Four is the full complement of eggs laid. The ground is a very pale greenish stone-colour, varying a little in intensity, but never very dark, and always of a rather dull tint. As a rule, the markings are of a rather pale olive-brown, and consist of very minute specks and freckles, so numerous that they run one into another, sometimes obliterating the whole of the ground-colour and making the eggs to appear to be unicoloured a pale olive; never do the freckles leave much of the ground visible.

Two clutches—probably they are somewhat abnormal—remind one very much of the eggs of *Drymochares nepalensis* (Oates, op. cit. i. p. 188). The ground-colour is a pale greyish green, far clearer than usual, and the freckles are of a dull purplish red, and are less numerous at the smaller end than is generally the case, so that a fairly distinct cap is formed covering the larger third of the egg.

Yet another clutch has a pale yellow stone ground-colour, but this can only be seen when a very close examination is made, for it is almost completely obliterated by comparatively bright tan freckles, so that, at a short distance, the eggs appear to be a pale olive or tan-brown.

In shape they are rather long ovals, decidedly longer in proportion to their size than the eggs of any other *Cyornis* with which I am acquainted; moreover, abnormal eggs tend to be yet longer ovals rather than the peg-top, or extra

broad oval shape, which most abnormal eggs of this genus assume. The texture is precisely the same as it is in the eggs of *Cyornis rubeculoides* and *C. tickelli*, though the shell may average a shade stronger. Fifteen eggs average $0''\cdot79 \times 0''\cdot58$, and among these the largest measures $0''\cdot84 \times 0''\cdot61$ and the smallest $0''\cdot70 \times 0''\cdot56$.

They breed principally in the end of April and the first few days of May, a few late pairs not having their eggs laid until the end of that month. They affect shady ravines and cool evergreen-forest for breeding purposes, and though in the cold season they may often be seen in clump-bamboo jungle, I do not think they ever build in such places. Like all the Blue Flycatchers, *C. magnirostris* is a very close sitter, but it is a shy bird, and a nest once handled is sure to be deserted.

48. ANTHIPES LEUCOPS. (*Oates*, op. cit. ii. p. 33.)

This is a decidedly rare bird in Cachar; I have met with very few specimens, and, until May this year, 1895, never saw a nest. During this month, however, I was so lucky as to get no less than four, three containing eggs and the fourth newly-hatched young. My first nest was taken on the 3rd of May, from the bank of a small but deep ravine running through rather dense forest, at an altitude of some 4800 feet. It was placed at the roots of a small bush and was well concealed, notice being first drawn to it by the flight of one of the parent birds. Nooses made from fibres of the bark of a tree-fern which grew close by were set about the nest, and in a few minutes both birds returned. For a short while they refrained from visiting their nest, but at last one made a dive for it, going straight into the noose set at its mouth. The cries made attracted its mate, who went to see what was the cause, and, as it fortunately happened, placed his foot in another noose set a few inches from the nest. Taking the birds out of the nooses, I then examined the nest, which contained two fresh eggs. These were very different from those of the genus *Cyornis*, and differed considerably even from those of its ally *C. poliogenys*. The ground is

pure white, and the markings consist of specks, spots, and tiny blotches of rusty red, these being almost non-existent at the smaller end and sparse elsewhere, except in a dense ring at the larger end. There are no real subordinate marks, though a few of the blotches are rather pale and grey in tint. They are rather broad, blunt ovals, very slightly compressed towards the smaller end. The texture is smooth and close, but glossless and rather chalky. They measure $0''\cdot77 \times 0''\cdot59$ and $0''\cdot76 \times 0''\cdot58$.

The nest was a globular structure of grass, leaves, and a few ragged old bamboo-leaves, neither very neatly nor very compactly put together, and lined with very fine grass-stems. Outwardly it measured some 6 inches in its longest diameter by about $4\frac{1}{2}$ in breadth, the chamber being rather less than $3\frac{1}{2}$ by $2\frac{1}{2}$.

The same day as that on which the first nest was taken another, together with one of the parent birds, was brought to me by a small Naga boy, who said he had found it placed in a hollow amongst a number of loose stones lying close to the roadway, but well sheltered by thick bush-jungle. The nest does not appear to have differed in any way from the one just described, and it must have been very much the same in size, though, having been considerably pulled about, it was not possible to measure it. It contained four hard-set eggs, much like the two in the nest first taken, but rather more profusely spotted and with the ring at the larger end rather less distinctly defined. They measure $0''\cdot72 \times 0''\cdot56$, $0''\cdot71 \times 0''\cdot57$, $0''\cdot71 \times 0''\cdot56$, and $0''\cdot69 \times 0''\cdot57$.

A third nest brought to me at another place, some 2000 feet lower elevation, contained four young ones, and a fourth, taken the following day, May the 8th, contained four eggs just on the point of hatching and quite unblowable. This last nest is a shade more compact than the three others, and, in addition to the bamboo-leaves and broad grass-blades, which form the principal materials used, there are a few other dead leaves wound into the base and back. The lining of grass-stems is also very thick. In size it is about $6\frac{1}{2}$ inches perpendicularly and about 5 inches horizontally across.

The diameters of the inside are about $3\frac{1}{2}$ by $2\frac{1}{2}$, and the entrance, which is very large in proportion, is about 2 inches. The eggs differed from those already described in being less richly marked and in having no signs whatever of a ring at the larger end, the spots being more equally distributed over the whole surface of the shell. The four average $0''\cdot77 \times 0''\cdot585$.

Two other nests were exactly like the above in construction and size, but one was placed in a very thin fork of a tiny dead sapling, growing among ferns and caladiums, and, being only about 3 feet from the ground, was quite hidden by these. The other was placed in a bush, well in the centre, in an *upright* fork, not in horizontal ones, like the other two. There were two eggs in each of these nests. Those in the first were rather more reddish and not *quite* so profusely stippled; they measured $0''\cdot7 \times 0''\cdot52$. Those in the second nest were identically like the five first described, but more regularly oval in shape; they measured $0''\cdot71 \times 0''\cdot54$ and $0''\cdot71 \times 0''\cdot53$.

A fourth nest was taken from among a thick tangle of vines growing over a rocky bank. This nest was rather more bulky than the others and not quite so tidy. It contained five young ones.

The texture of the eggs is very fine and close, and there is a faint indication of a gloss, but it is not at all highly developed in any of the eggs. They are stouter in proportion to their size than are the eggs of *Cyornis*.

49. CHELIDORHYNX HYPOXANTHUS. (*Oates*, op. cit. ii. p. 51.)

I have had two nests brought to me as belonging to this bird, but I have never personally found and taken one. Of these two nests, I believe, both belonged to this little Fly-catcher, but the eggs from the two nests differ so much that one *must* be wrong, and I believe that those shown me in the first nest had been taken from some other bird's nest and placed in this one, whilst, judging from analogy, those in the second nest do belong really to *Chelidorhynx*.

The first nest was found placed on a rough slab of rock on the banks of the Laisung stream. It is a very compact little structure, with walls almost straight externally; in fact the nest is, if anything, slightly wider at the base than at the top. The whole affair is made of moss and nothing else, and there is no lining. From edge to base it is fully 2¹/₂, which is a good half-inch more than it is in diameter. The hollow for the eggs is about 1¹/₄ × 1¹/₄. This nest contained three eggs, which look like the eggs of *Orthotomus sutorius*, the blotches on which have been almost washed out, but the texture is much coarser and stronger, and the eggs are *long* ovals in shape. They measure 0¹¹/₆₁ × 0¹¹/₄₁, 0¹¹/₆₁ × 0¹¹/₄₁, and 0¹¹/₆₀ × 0¹¹/₄₀. I accused the man who brought the nest and eggs of having changed the latter, but he strongly denied it, and said that he would catch me one of the birds, and that same day he turned up with a Yellow-billed Flycatcher which he had managed to snare. I have no idea what these eggs can be.

A second nest was brought to me on the 20th May, 1892, with the male bird, one whole egg, and two completely smashed, having been broken by the bird in its efforts to escape, as the noose in which it was caught had been placed over the nest itself. The nest is exactly like the other, but was placed on a horizontal branch overhanging the stream. It was not placed in a fork, but built on a single small branch, in the same way as the nests of *Rhipidura* are so often built. The ground-colour of the third egg is a very pale creamy yellow, almost white, and the markings consist of small blotches and spots of grey and yellowish brown, very profuse at the larger end, where they form a blurred, ill-defined ring, and rather thinly scattered elsewhere. The texture is fairly close and smooth, but without gloss, and is very fragile. In shape it is a broad obtuse oval, measuring 0¹¹/₅₅ × 0¹¹/₄₅.

This egg, although very distinct from, has still much of the character of the eggs of the genus *Rhipidura*, and is a regular Flycatcher's egg in appearance. Moreover, the fact that two out of the three eggs were broken by the bird does

not point to the fact of the eggs being changed or tampered with. On the other hand, the first-described eggs are not unlike those mentioned in Hume's 'Nests and Eggs,' vol. ii. pp. 30, 31.

50. CHELIDON NEPALENSIS. (*Oates, op. cit. ii. p. 271.*)

During the end of April, 1895, I had occasion to visit a Cachari village situated on the brow of a very rocky and precipitous hill overlooking the Naga-Hills territory. Having finished the business which took me to the village, I was able to bestow my attention on other matters, and I then saw that several pairs of Martins were flying in and out of some of the Cachari houses, and these flew so close to me that I was enabled to identify them as *Chelidon nepalensis* without taking the trouble to shoot one. Unfortunately, the birds had not then begun to lay, and I could only find two or three nests in a half-built state. These seemed to be very much like the nest of the common English Martin: that is to say, they were cup-shaped shells of mud, or rather semi-cup-shaped, affixed to beams *inside* the houses. There were then no finished nests, so I was unable to take any measurements. I left word with the head man of the village that I would give a reward to any one who would bring me nest and eggs with, at least, one of the parent birds, and on the 10th of May, when stopping in another place some five or six miles distant, I had a nest, four eggs, and the remains of a bird brought to me.

The nest was, unfortunately, much broken, but it appeared to have been of the usual shape, and had been fixed to one of the rafters *inside* the house in the same manner as were the partially-built nests I had myself seen. The lining was a dense mass of feathers mixed with a few scraps of grass-blades. Most of the feathers seemed to be those of fowls, which the birds had collected in the village, but there were also a few feathers of *Megalæma marshallorum*, easily recognizable by their deep purplish-blue colour, and a good many of Green Pigeons', which birds fed in great numbers on a species of *Ficus* growing near the village.

The four eggs, pure white of course, seem to be rather small in proportion to the bird, as they measure only $0''\cdot75 \times 0''\cdot46$, $0''\cdot74 \times 0''\cdot41$, $0''\cdot72 \times 0''\cdot46$, and $0''\cdot71 \times 0''\cdot46$. In shape they are long, narrow ovals, slightly compressed towards the smaller end, which is very obtuse. The texture is that of the egg of the Common House-Martin, but is rather more chalky and fragile.

In 1893, on the 28th July, I had four eggs brought to me, together with a nest *said* to belong to the bird. They were exactly like those above described, and were brought from the same village.

It is not a common bird, and even the village from which the nests were taken is only frequented by some half dozen pairs.

51. *HIRUNDO STRIOLATA*. (*Oates*, op. cit. ii. p. 281.)

I find it almost impossible in North Cachar to draw any line between *H. striolata* and *H. nepalensis*, but some birds which I found breeding on some hills overlooking the Laisung Valley are almost white below, with very broad striations, the wings, however, varying from $4''\cdot7$ to $5''$. These birds I am inclined to put down as *H. striolata*, as defined by Oates and others.

The place where I found them breeding is a lofty, very precipitous hill, overlooking the junction of the Laisung and Jennam streams. The south-east face consists of alternate tiers of perpendicular rock, from 5 to 50 feet high, and narrow ledges covered with grass and stunted jungle. Seeing a number of Striated Swallows constantly hawking for insects about these rocks, I made inquiries as to whether any one knew where they bred, and was told that they did so on one of the trees nearly at the summit of the mountain. I therefore sent some Nagas up to investigate, and they returned in a few hours with the information that the birds were busy building. Accordingly, the next day I went myself to see whether I could take any nests. Unfortunately, I found the hill more than I could manage with but one arm, and had eventually to stop at a ledge below where most of the birds

seemed to be congregated. Still there were a few birds about my ledge, and I could watch two pairs building only a few yards from me, and two other nests were also in sight. None of these nests were retort-shaped, all being mud semi-cups fastened against the surface of the rock, and in each case well protected by a projecting piece of rock which overhung them. None of these four nests were completed, so I ordered my two Nagas on to the next ledge, and from that they pointed out to me a nest which they said contained four eggs, and which was within their reach. On this nest I had a noose set, and, making the Nagas keep out of sight of it, soon had one of the birds captured. The nest and its contents, together with the bird, were then brought down to me, but the mud part of the nest broke into pieces as it was being removed. The mud-work was very bulky and of considerable thickness, and it seemed to me to have been much larger than the normal nest of *H. rustica*. It contained an immense mass of feathers mixed with straw, completely hidden in which were the eggs, not four, as first reported, but three only. These are pure white eggs, with a very fine smooth texture, showing a very faint gloss. They are rather broad, true ovals in shape, and measure 0''·84 × 0''·60, 0''·84 × 0''·59, and 0''·81 × 0''·50.

On a former occasion I had a nest and four eggs brought to me, with a bird of this species. The nest was just like that of *H. rustica*, and had been built between and against two rafters in a house in the Gunjong village. The eggs were, however, very richly spotted, even more so than are nine out of ten eggs of *H. rustica* or *H. gutturalis*, and I am afraid that in this case a nest of the last bird was palmed off on me as belonging to *H. striolata*, a bird of that species having been captured by the Naga. At the time this nest was brought to me a number of Striated Swallows had been observed by me to frequent the Naga houses, and I offered a reward to any one who would show me a nest *in situ*. Every year a number of *H. gutturalis* breed in these villages, and it would not have been a matter of much difficulty to knock over a Swallow of the striated form and then take a

nest of *H. gutturalis*. It is, however, just possible that the Striated Swallows *may* lay spotted eggs as well as white ones, as does *H. fluvicola*.

52. *ÆTHOPYGA IGNICAUDA*. (*Oates*, op. cit. ii. p. 351.)

The only two nests I have seen of this bird were both taken from evergreen-forest on the very highest part of the Hungrum Peak, close on 6000 feet altitude. All about here the forest has an undergrowth of bracken, ferns, caladiums, and similar plants, and it was to tall fronds of the first-mentioned that both the nests were attached. They were composed entirely of very fine seed-down, collected from the fallen pods of the simul-tree, and this down was held together with cobwebs and a few tiny scraps of green moss, and also about half a dozen fine, but very long shreds of grass. The latter passed once round the nest, in and out of the down, and then both ends were firmly attached to the frond from which the nest hung. In shape the nests are like pears, the thin end of which is *extra* thin and the lower end unusually rounded. One nest is much more drawn out than the other. The longer nest is full 5" in length, the other under 4"·5, and both are about 2"·5 in breadth, the egg-cavity measuring about 2"·5 in its perpendicular and about 1"·6 in its horizontal diameter. There is no porch or sign of a porch, and the entrance, which is near the top of the chamber, is well under an inch wide.

One nest contained three eggs, and the other only two. The latter were given away by me without any notes having been taken, but, so far as I remember, they did not differ at all from the other three. These are white, speckled and blotched with light brown, very faintly tinged with violet. Some few of the blotches are very blurred and ill-defined, but the majority are of a decidedly longitudinal character. In all three eggs the markings are most numerous towards the larger end, and they there form an indistinct ring, rather more pronounced in one than in the others, and in this egg also the blotches are somewhat darker. In shape they are broad blunt ovals, measuring 0"·55 × 0"·42, 0"·55 × 0"·42,

and $0''\cdot54 \times 0''\cdot41$. The texture is fine and close, but quite glossless, and the shell is extremely fragile.

53. *ÆTHOPYGA GOULDIÆ*. (*Oates*, op. cit. ii. p. 352.)

In shape the nests of this species are like those of *Æ. ignicauda* just described, but differ in being rather larger, more bulky, and somewhat less tidily put together. In the half-dozen nests or so that I have seen, the principal material used has been simul cotton-seed or some other vegetable down, a few grasses, scraps of moss, and cobwebs being used only in sufficient quantities to hold the nest together. In one nest I found that the delicate tendrils of a small yellow ground convolvulus had been used. In all nests the grasses, moss, &c. preponderate over the cotton-down at and about where the nest is attached to the supporting frond or twig, and thence they are brought round and about the nest and underneath the bottom. The biggest nest I have taken was over $7''$ in length by about $2''\cdot65$ in breadth, whereas the smallest is a little over $4''\cdot5$ by $2''\cdot2$ only in breadth. The interiors of the two nests measure respectively $2''\cdot6 \times 1''\cdot5$ and $2''\cdot8 \times 1''\cdot4$. In all nests the entrance is so placed that about two-thirds of the egg-chamber is below it, and it measures from $0''\cdot8$ to about $1''\cdot2$ in diameter.

All the nests I have seen were, with one exception, fastened to fronds of the common bracken, about 6 to 8 inches from their summits. The one exception was attached to the pendent twig of a small bush growing in among a quantity of bracken. All my nests were taken at or near Hungrum at an elevation of over 5000 feet, and all were found in the same evergreen-forest as that in which the nest of *Æ. ignicauda* was taken. The bird seems to take infinite pains to conceal its nest, and there are few which are harder to find; indeed, on some occasions, I spent a considerable time watching birds which I feel sure had their nests somewhere close by, yet totally failed in finding them.

The following are the dates on which I have taken nests in different years:—

5th May: two eggs, measuring $0''\cdot52 \times 0''\cdot39$ and $0''\cdot51 \times 0''\cdot39$.

7th May: three eggs, on the point of hatching, and not measured.

11th May: two young and an addled egg, also not measured.

12th May: three eggs, measuring $0''\cdot54 \times 0''\cdot41$, $0''\cdot53 \times 0''\cdot41$, and $0''\cdot53 \times 0''\cdot41$.

12th May: nest with three young a day or two old.

18th May: three eggs, measuring $0''\cdot56 \times 0''\cdot43$, $0''\cdot54 \times 0''\cdot42$, and $0''\cdot54 \times 0''\cdot42$.

The eggs are white, and are freckled with specks and very small irregular blotches of pale greyish pink or pale brown, some so pale as to be hardly perceptible unless closely looked into, while none are very dark. In one or two eggs there are also a few short irregular lines of the same character. In one clutch and one egg of another clutch these markings are fairly numerous and *comparatively* dark, especially at the larger end; in the other eggs they are very scanty and feebly defined, more particularly in one pair, where they look as if some one had been trying to work them out with a considerable degree of success. In shape they are rather broad obtuse ovals, very little compressed towards the smaller end, and the texture is the same as in the eggs of *Æ. ignicauda*.

54. *ÆTHOPYGA DABRYI*. (*Oates*, op. cit. ii. p. 353.)

This form of Sun-bird seems to be absent from the whole of the district, except the ranges on the extreme east, and thence into Manipur, where it was doubtfully, but probably correctly, identified by Hume. None of my correspondents in the plains of Cachar and Sylhet have met with it.

On the 7th May, 1891, I took a nest of this species and captured the female on it; the male I failed to snare, nor did I get any but the most cursory glances of it, not sufficient for the purposes of identification. The nest differed most strikingly from any others of the Nectariniidæ that I have seen, in that it was shaped a very regular oval, instead

of being pear-shaped. There was no attenuation where the nest was attached to the support, but, instead, this was well incorporated in the roof of the nest itself, being surrounded by the cotton-down, as well as with fine shreds of tan-coloured grass, this material being the only one used to keep the down in position. It is a very tiny nest, measuring only $3\frac{1}{2}$ inches perpendicularly by about $2\frac{1}{2}$ horizontally, the inside being not quite an inch less both ways. The entrance is about the middle, and is an inch in diameter. Like nearly all the nests of this genus, this one was attached to a tall bracken-frond, and it was found in the same kind of forest as were the nests of *Æ. ignicauda* and *Æ. gouldiæ*.

It contained three almost fresh eggs, much like those already described of the above-mentioned two species, but the markings are rather more grey in colour and freckles are more numerous than blotches. There are also very marked rings about the larger end, in one egg both freckles and blotches being practically confined to this ring and inside it. These eggs measure $0''\cdot57 \times 0''\cdot41$, $0''\cdot56 \times 0''\cdot42$, and $0''\cdot55 \times 0''\cdot42$.

55. ARACHNOTHERA LONGIROSTRIS. (Oates, op. cit. ii. p. 371.)

The nest of this bird is like that of *A. magna*, and, strange to say, is very little, if anything, smaller. The first nest I ever saw was one sent to me from Darjeeling, and, so far as one could judge from the dried remnants of the leaf sent with it, had been attached to the under side of an exceptionally large leaf of the common khydia. It was cup-shaped, and had been attached by about half its rim to the overhanging leaf, the material being drawn through most beautifully made punctures, and then knotted and twisted on the upper side together with cobwebs. The outer material in this nest was principally fine grass mixed with what looked like shreds torn from the inner soft bark of some tree, this stuff having much the appearance and feeling of soft tow. The lining was of very fine grasses, overlaid with a few skeleton leaves. The nest was too much torn to make the

dimensions of any value. At the end of July, 1887, I took a nest containing two young birds. This was of the same shape as that already described, but was attached to the lower side of a leaf of a stunted wild plantain. In measurement externally it was 4"·1 across and slightly less deep; the walls were very thick and compact, being about 0"·4 at the rim, 0"·6 just below, and almost an inch at the bottom. The materials consisted of skeleton leaves and very fine soft grass, and a few shreds of the outer bark of ekra; the lining was a mass of vegetable down most beautifully matted close to the bottom and walls of the nest.

In August, 1890, I took another nest, and a third on Sept. the 7th of the same year. Both of these in general construction closely resembled the last, but they were more oval in shape, the leaves to which they were attached forming more a back than a roof to the nest. The longest diameters of these nests were very nearly 5½ inches.

In 1891-92 I took no nests myself, but received three from a friend in Silchar, who also sent me the hen birds with two of them. Two of these nests had been fastened to large tannah-leaves, but I was not informed as to how the other was placed. They were just like those found by myself, having nearly three-quarters of the rim attached to the leaf.

In a deserted nest, which I found in 1887, the whole of the rim is fastened to the covering leaf, and the entrance is entirely surrounded by material.

In 1893 I took three more nests, built just like those already described. Two were fastened to the leaves of plants only a few feet high, the third to a plantain-leaf about 6 feet from the ground.

With the exception of one nest taken in May, 1893, and one on the 3rd June, 1892, all my nests have been taken in July, August, and September. That sent me from Darjeeling contained eggs, which had been laid about the end of April.

In the Bombay Natural History Society's Journal, no. 3, 1891, there are some interesting notes on the nidification of this species, which show that the western birds build far larger

nests than ours do here, and their nests also differ in having two entrances. None of the nests which I have seen have been thus provided, and I have no notes of any exceeding 6 inches in longest diameter, whereas some found in Kanara are nearly a foot in length. They seem also to breed early in the year in the west, whereas here I have taken a single fresh egg as late as the 9th of September, and another one was sent me which had been taken about the 15th.

I have seen 18 eggs of this little Spider-hunter, and in all the ground-colour is just the same, in one only being slightly tinged with grey; in the others it is of a pale pinky cream-colour, clear, but by no means bright in tint. The markings consist primarily of freckles and small blotches of light brownish red, some with rather a pink tinge, and secondarily of others of pale lavender and pinkish lavender. In most eggs they form an exceedingly well-defined ring, about $0\frac{1}{2}$ broad, in which the markings are so numerous that for about two-thirds the width of the ring they all coalesce and form a continuous mass of colour, the general hue of which is a pale reddish brown, blurred here and there with a purplish tinge where the subordinate marks show through the others. Elsewhere, as a rule, the markings are *very* scanty, and they are never numerous. On one pair of eggs the blotches form a blurred indistinct cap. On a few eggs the subordinate blotches are absent, which gives a bolder, brighter character to them, and in another egg there are about half-a-dozen rather large blotches of yellowish brown.

One egg—the one I noted above as being greyer than the others—has the markings more subdued, and also more equally distributed over the whole surface of the egg, though the ring is still very plainly defined. This egg is extremely like in character those of *Aethopyga*. Indeed, all are far more like the eggs of that genus in every respect than they are those of *A. magna*. In the latter bird's eggs the texture is close, fine, and *hard*, the surface extremely smooth, often with a decided gloss, and the shell is fairly stout. Those of *A. longirostris* have the grain fine, but *not* very close, the

texture is decidedly chalky, and the surface is without any gloss, while it is extremely fragile.

Typically the eggs are rather long, obtuse ovals, not much compressed towards the smaller end, but they vary a great deal in shape, and I have seen broad, but pointed ovals—one pair regular peg-top shape—and also narrow pointed eggs. In size, also, they vary a great deal; of the 18 eggs seen I have measurements of 12, and these vary in length between 0".76 and 0".65, and in breadth between 0".50 and 0".59, the average of the 12 being 0".72 by 0".54. If, however, the two smallest eggs be deducted, the length only varies between 0".70 and 0".76, and the average is increased to 0".73, or rather over, by 0".54. To show the variation in size and shape, I may mention that two eggs in my collection measure respectively 0".65 × 0".57 and 0".76 × 0".51.

These birds do not breed here at any great elevation, and they are more common in the plains at the foot of the hills, and thence up the valleys from 500 to 750 feet, than they are higher up, and I have not seen any nests taken at a higher elevation than 1000 feet. They generally build their nests in tree-forest with very dense undergrowth, especially in such as have it composed of plants, patches of grass, and similar vegetation, and not of bush and cane. The nest sent me from Darjeeling was taken from a forest at an elevation of over 5000 feet.

56. *DICÆUM CHRYSORRHEUM*. (*Oates*, op. cit. ii. p. 378.)

I have taken very few of the nests of this Flower-pecker, though the bird is by no means rare. Such nests as I have seen have all been of the same description and character as those made by the other Dicæidæ. They are very neat, small, oval purses, made of seed-down, cotton, and other similar material—not feathers—and lined with the very finest seed-down, collected from fallen and burst pods of bombax-trees. This lining is very neatly matted down into the nest, so as to cover the whole interior, with the exception of quite the top, and even here there is sometimes placed a small

amount. The nests are from $3\frac{1}{2}$ to $4\frac{1}{2}$ inches long, and from 3 to $3\frac{1}{2}$ inches broad, the majority measuring under $4'' \times 3''\cdot 2$. The nests I have personally taken have all been suspended to small twigs of trees and bushes at from 3 to 6 feet from the ground, and this species does not seem ever to place its nest very high up in trees, as some of its nearest relations often do. They are fastened to the twigs, which are sometimes partially or wholly surrounded with cotton, by cobwebs and a few fine grasses and fibres, which also serve the purpose of holding the other, non-adherent parts of the nest together.

My eggs—two is the number generally laid, rarely three—average $0''\cdot 63 \times 0''\cdot 45$. In shape they are broad ovals, decidedly compressed towards the smaller end, which is a good deal pointed. The texture is soft and somewhat chalky, the surface smooth but glossless, and the shell very fragile.

These birds are early breeders, April being the principal month, together with the first few days of May. They may be found during the breeding-season at all heights above 2000 feet, below which they do not seem to be commonly met with.

57. *DICÆUM OLIVACEUM*. (*Oates*, op. cit. ii. p. 380.)

This little bird, which is extremely common in N. Cachar, breeds pretty well everywhere from over 2000 feet up to the highest peaks. Its nidification differs in no way from that of *D. concolor*, the nest being a tiny purse of soft down, well matted and bound together with a few fibres and many fine shreds of grass. In size it measures some 3 inches long by about 2 broad, and the interior is often completely filled with the very finest seed-down, the ends of which often project from the entrance. Of course, as the eggs are laid and the bird commences to sit, this is all beaten down and fits properly into the bottom of the nest. I have seen no nest at all like the moss-and-grass ones found by Miss Cockburn, nor have I seen any which reminded me in the least of the nests of *Piprisoma* (Hume, 'Nests and Eggs,' 2nd ed. ii. pp. 273, 274). The Plain-coloured Flower-pecker does not appear to

be so fond of fixing its nest at great heights as is its Neilgherry relation, but, like that bird, usually selects a pendent twig, having leaves which fall over and quite screen the white little ball from view, so that it is thus a very hard nest to find.

The eggs are, I think, generally two in number; they are of course white, and are broad, rather pointed ovals in shape, very fragile, and with a chalky texture, showing no gloss. My eggs average about $0''\cdot57 \times 0''\cdot40$, which is a good deal smaller than the average of the eggs of *D. concolor*.

58. *PIPRISOMA MODESTUM*. (*Oates*, op. cit. ii. p. 383.)

This is *not* the common form of *Piprisoma* in North Cachar, *P. squalidum* being far more numerous. I have taken but two nests of this Flower-pecker, and, as might be expected, they do not differ from those of *P. squalidum*; indeed, the nests first described by Capt. Beavan on page 277, vol. ii. 2nd ed. of Hume's 'Nests and Eggs,' would do equally well for both of these species. I can add practically nothing in the way of describing them. Both were a very bright tan-red in colour, owing to the outside being entirely covered with minute scraps from the inner bark of the nayessur-tree, and both could be taken up, rolled in a ball, and danced on, and then restored uninjured to their original shape; one nest, which I kept for some five years, retained its elasticity and firmness up to the very day it was eventually thrown away by a stupid servant.

The eggs of one clutch are just like the common type of egg of *P. squalidum*. The ground-colour is pink, and it is densely covered everywhere with brownish-pink blotches, very tiny, numerous everywhere, but even more so at the larger end, where, in one, they form an indistinct cap, and in the other two equally indistinct rings; they measure $0''\cdot61 \times 0''\cdot44$, $0''\cdot59 \times 0''\cdot43$, and $0''\cdot57 \times 0''\cdot47$. In shape they are regular ovals. The shell, stouter than that of the eggs of genus *Dicaeum*, is otherwise much the same.

Another egg, an addled one, is rather peculiar in coloration. The ground-colour is of the usual creamy pink, but the

markings are very bold and are confined almost entirely to a broad, irregular ring at the larger end. They consist of large blotches of brownish red, running into and overlaying one another, the colour being, so to speak, doubled in intensity where they coalesce. There are also a good number of secondary, smaller blotches of lavender and pinky grey. Outside the ring there are but few blotches and freckles of either kind, but *inside* it they are fairly numerous. The egg is a broad oval, rather inclined to the peg-top shape, but not very pointed. It measures fully $0''\cdot64 \times 0''\cdot50$.

I have yet a fifth egg, which I believe to belong to this species, though I am not prepared to guarantee its authenticity; it was brought to me by a Naga who *afterwards* went and trapped a *P. modestum*, which he said was one of the owners of the nest. It is like the eggs of the clutch first described, but is much paler, with lighter and smaller freckles and blotches, without any signs of either ring or cap. It is an abnormally fragile egg. It measures $0''\cdot59 \times 6''\cdot13$.

59. CHRYSOPHLEGMA FLAVINUCHA. (*Blanford*, op. cit. iii. p. 28.)

These birds breed in some numbers from the level of the plains up to about 3000 feet, above which height very few birds will be met with. Most nests are found in trees standing in rather thin forest with a good deal of undergrowth, and such a forest, practically evergreen, which borders most of the smaller rivers, is the favourite haunt of the Large Yellow-naped Woodpecker during the breeding-season. Although it does not often excavate its nest-hole at any very great height from the ground, it does not, on the other hand, ever make it very low down, being in this respect very unlike *Gecinus chlorolophus*, which sometimes makes its holes barely 2 feet from the ground, at others over 40 feet from it. The majority of nests of *C. flavinucha* will be found between 10 and 15 feet up, the rest between 6 and 20. Again, it shows a marked preference for boring into the *trunks* of trees rather than into the larger limbs and branches, and for every three nests found in the former position not one will be

found in the latter. Its tunnels are seldom of any great depth, unless the interior of the tree is very rotten, being often only a few inches long.

Three is the normal number of eggs laid, sometimes only two, but one clutch which I took in May, 1890, contained four. The eggs are highly glossed and very stout, the principal thing about them being their small size when compared with the bird itself. On the average they are very little larger than the eggs of *Gecinus occipitalis*, a much smaller bird, and they cannot be distinguished from them, though, taking a large series of both, those of *C. flavinucha* may not be quite so long or so pointed.

Twenty-four eggs average $1''\cdot23 \times 0''\cdot92$, and they vary in length between $1''\cdot09$ and $1''\cdot40$, and in breadth between $0''\cdot80$ and $1''\cdot02$. They are normally broad ovals, a good deal compressed towards the small end, which is *rather* pointed. Abnormal eggs tend to be longer and more pointed, rarely to be of the broad peg-top shape.

60. *GEVINULUS GRANTIÆ*. (*Blanford*, op. cit. iii. p. 30.)

I have taken only three nests of this bird, and of these three I have kept notes about only one, which I found at Gunjong, the headquarters of my subdivision, within about half a mile of my bungalow. This nest was placed in a dead, extremely rotten stump of a tree, standing in jungle composed entirely of the small solitary bamboo, a few dead trees, which stood here and there, showing that the land had once been forest, but had been cleared for cultivation. The burrow, which was some 12 feet from the ground, looked very like a natural one, merely finished off a little bit round the edges by the birds. It just pierced through about 3 inches or less of rotten bark, and then led into a large natural hollow, about a foot in diameter and rather less in depth. It contained three eggs, broad ovals, rather compressed towards the smaller end, but not very pointed. The texture is similar to that of the eggs of *G. occipitalis*. The eggs measure $1''\cdot05 \times 0''\cdot74$, $1''\cdot04 \times 0''\cdot77$, and $1''\cdot02 \times 0''\cdot76$. This nest was taken on the 20th May, 1892.

Both the other nest-holes were in trees standing in bamboo-jungle; one just a rotten stump like that above described, the other a tree which had been ringed, but not quite deep enough, and it was still alive on one side. The eggs, which I gave away without measuring, only differed, so far as I remember, in being rather smaller.

61. *IYNGIPICUS CANICAPILLUS*. (*Blanford*, op. cit. iii. p. 46.)

Although this bird is so extremely common in Cachar, I have managed to find very few nests. It is difficult to say what sort of country or jungle it prefers, and I think, so long as the tree is suitable, the bird does not much mind where it stands. Unlike *I. pygmaeus*, *hardwickii*, and *gymnophthalmus*, which all seem to make their nest-holes not far from the ground, the Burmese Pigmy Woodpecker selects boughs at a very great height. Whilst camping in the extreme north of the district, I discovered a pair of these birds that were nesting on a small branch almost at the very top of an enormous simul. It was quite impossible to get at the nest, but with a pair of glasses I could watch the birds going in and out, which they did seemingly quite unconcerned by my looking on. As usual, the hole had been bored from the under side of the branch.

Another nest, which had been occupied for two years, had been made in a very lofty dead stump, in which also there was a nest of *Coracias affinis*. The little Woodpeckers had selected the extreme summit of the tree for their operations, and as it was a very rotten one, it was not safe for any one to attempt to get at their nest. The entrance itself could not be seen, as there was a large excrescence just below it. This tree was just outside my office.

Other nests, which I have been able to get at, have all been made at great heights from the ground, and I cannot call to mind any case in which I remember its being lower than some 30 feet from it. The hole seems to be nearly always made in a rather small branch, very rarely in the trunk itself or the larger limbs: the entrance, which

measures little over an inch in diameter, is nearly always, also, on the under side of the branch.

I think three is the number of eggs most often laid; I have not taken more than this number, and have seldom seen four young birds accompanying their parents after they were first fledged. I have only notes on five eggs—two clutches; of these, three of one clutch are all very broad ovals, obtuse, and *not* much compressed towards the smaller end, the texture fragile and, for a Woodpecker's egg, not much glossed. These three measure $0''\cdot74 \times 0''\cdot60$, $0''\cdot73 \times 0''\cdot59$, and $0''\cdot72 \times 0''\cdot58$. The other two eggs are even more blunt, but not such broad ovals; they measure $0''\cdot76 \times 0''\cdot58$ and $0''\cdot75 \times 0''\cdot56$.

62. PYRRHOPICUS PYRRHOTIS. (*Blanford*, op. cit. iii. p. 50.)

This handsome Woodpecker is very common in many of the lower valleys formed by the big streams, but I have been very unfortunate in obtaining its eggs. My first nest-hole was found in a stump standing in mixed jungle of all kinds; the stump was a comparatively round one, and the tunnel, with the chamber at the end, had all been bored in wood which was quite hard; yet, in spite of this, the entrance to the chamber must have been nearly 2 feet long, and it was about $2''\cdot75$ broad at the lower end and about $2''\cdot25$ at the entrance. It was about 7 feet from the ground, but, being on a sloping bank, could be reached from above. This nest was found on the 12th June, 1893, and in the same month, on the 23rd, I found another close by. It was in the same kind of stump, only more rotten, and situated in the same jungle.

The first nest contained a single egg, a very long, pointed oval, measuring $1''\cdot17 \times 0''\cdot80$, intensely glossy, and with a very fine close grain. The second nest contained four eggs, which are equally hard and close-grained, though a trifle less glossy. The shape, however, is very different, as they are much broader ovals, and also less pointed. They measure $1''\cdot13 \times 0''\cdot88$, $1''\cdot12 \times 0''\cdot87$, $1''\cdot11 \times 0''\cdot90$, and $1''\cdot10 \times 0''\cdot82$. Both nests were taken at elevations below 500 feet.

63. TIGA SHOREI. (*Blanford*, op. cit. iii. p. 62.)

I have only seen one specimen of this species, a female, caught on the nest and brought to me with its three eggs. These are very long, decidedly pointed, and extremely stout, close-grained, and glossy. They measure $1''\cdot26 \times 0''\cdot80$, $1''\cdot23 \times 0''\cdot86$, and $1''\cdot23 \times 0''\cdot80$. They are the longest, in proportion to their breadth, of Woodpecker's eggs I have ever seen. They were said to have been taken from a hole in an oak tree standing in a scattered forest of that kind of tree. The elevation was somewhere about a thousand feet, and they were taken on the 17th April, 1888.

64. CHRYSOCOLAPTES GUTTICRISTATUS. (*Blanford*, op. cit. iii. p. 65.)

This bird is mentioned in Hume's 'Nests and Eggs,' and I only enter it here as Messrs. Davison and Darling say that they have never taken more than one egg from a nest, whereas here—and I have taken many nests of this most common Woodpecker—they often lay four, and sometimes five eggs. The eggs average about $1''\cdot20 \times 0''\cdot90$.

65. COLUMBA PULCHRICOLLIS.

Two nests of this Pigeon, taken at Hungrum, about 5000 feet elevation, were of the ordinary Wood-Pigeon type—mere rough platforms of small twigs coarsely, but strongly, interlaced with one another; but they had one very distinctive and unexpected feature, namely, a sparse lining of feathers. The nests were rather large, nearly 9 inches in diameter; there was little or no depression for the eggs, these laying amongst the feathers and prevented from falling out by some of the twigs projecting beyond the others, and by the numerous interstices and small hollows in between them, in which the eggs would have caught had they moved about. Each nest contained a single egg, perfect ellipses in shape, rather coarse and stout in texture, with a dull surface, and measuring $1''\cdot55 \times 1''\cdot15$ and $1''\cdot50 \times 1''\cdot17$. Both nests were found on the same date, the 22nd June, 1891.

66. SPHENOCERCUS APICAUDUS.

This fine Green Pigeon breeds in great numbers in suitable places all over Cachar, and in some places, notably Guilang, at about 3000 feet, I have taken three and four nests in a day. The nest is the usual platform of sticks, some 6 inches in diameter, and is usually placed near the top of small saplings, such as have the most numerous boughs and twigs being most often resorted to. I have also taken their nests from very large briar bushes, only 10 or 12 feet from the ground. Two eggs are nearly always laid, but occasionally one may be found hard-set. They are just the same in shape as most Green Pigeon's eggs are, and the same in texture, perhaps even more regular ellipses than some, and also somewhat more coarsely grained, as, though beautifully pure white naturally, they stain rather easily. Fifty eggs average $1''\cdot30 \times 0''\cdot96$, in length ranging between $1''\cdot09 \times 1''\cdot37$, and in breadth between $0''\cdot87 \times 1''\cdot03$; very few eggs, however, will be found under $1''\cdot20 \times 0''\cdot92$.

These birds breed throughout April, May, and June, a few even as late as the earlier half of August.

67. ALCEDO GRANDIS. (*Blanford*, op. cit. iii. p. 125.)

The only notes on the Great Indian Kingfisher in Hume's 'Nests and Eggs' are some that I wrote a great many years ago in the 'Asian,' and in these notes I gave no dimensions. Three eggs of one clutch measure $1''\cdot10 \times 0''\cdot88$, $1''\cdot06 \times 0''\cdot87$, and $1''\cdot02 \times 0''\cdot86$. A single egg, not noticed in the above-mentioned book, measures $0''\cdot97 \times 0''\cdot88$.

68. CYPSELUS SUBFURCATUS. (*Blanford*, op. cit. iii. p. 169.)

My notes on the nidification of this bird were given by Mr. Hartert in *Nov. Zool.* i. p. 674 (see *Ibis*, 1895, p. 152).

69. PTILOLEMUS ANTENI. (*Blanford*, op. cit. iii. p. 153.)

On the 19th of May, 1893, I took a nest of this rare Hornbill. It was in a dead stump of a tree, some 20 feet from the ground, standing on a grass-covered hill just outside some jungle. The hollow was a large one, some 2 feet deep by about as much in diameter, and the entrance was

partially blocked by mud, though a hole was left large enough for the female to put her whole head out. The nest contained a single egg, much like many of those of *Anthracoceros*, and in colour a dull, very dirty fawn-brown. The texture is very coarse, even for a Hornbill's egg, and the surface is minutely pitted all over. The egg measures $1''\cdot87 \times 1''\cdot37$.

XXXII.—Notes on some Birds obtained at Kalaw, in the Southern Shan States. By Major G. RIPPON.

KALAW is a small village on the western edge of that part of the Southern Shan States which is called the Myelat, in the Hsamonghkan State. Its latitude is about $20^{\circ} 40'$ N., and its longitude about $96^{\circ} 40'$ E.

Kalaw is about 4500 feet elevation above the sea, but many small peaks round it, rising out of the plateau, reach a height of more than 5000 feet. At Kalaw itself there is a good deal of cultivation at the proper season. When I was there, however, in April last (1895), all the fields were dry, although a stream, which could have been used for irrigation, was flowing through them. Several spurs run out from the main plateau towards the low country to the west. Those near Kalaw have an elevation of from 4000 to 4500 feet, and are mostly covered with mixed jungle, while the higher knolls and ridges rising from the plateau are generally covered with pine-trees, and the difference of bird-life on the two is very marked.

I did not collect below 4000 feet, and seldom so low as this, which may account for the omission of Barbets and Woodpeckers, of many of which I could recognize the calls when I stood on the spurs looking into the valleys below. No birds met with beyond a radius of about five miles from Kalaw have been included in this paper, and I got few more of any interest until I had gone about 80 miles further east. The inclusion of familiar Burmese water-birds, shot or observed at a swamp about 16 miles east of Kalaw, and again at Fort Stedman, on the Inlè lake, appears to be useless.

I have inserted in the present paper the names of a few